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Sialidase Fusion Protein as Inhibitor of Infection by Influenza Virus

Malakhov et al. reported that sialidase fusion protein could be used as a novel broad-spectrum inhibitor of influenza virus infection (2). They showed a 90% effective concentration (nM) of 6.5 ± 86.8 in Table 1 as the concentration of DAS181 that gave rise to 90% cell protection from influenza virus A/Victoria/504/2000 infection (2). However, it is extremely unusual for three positive numbers with an average of 6.5 to have a standard deviation of 86.8, suggesting that the standard deviation may be a typographical error. The authors should explain this oddity.

Malakhov et al. mentioned in the abstract of their paper that "mouse and ferret studies confirmed significant in vivo efficacy of the sialidase fusion in both prophylactic and treatment modes." In my opinion, the ferret studies presented in Table 6 of the paper do not really support that statement. Comparing the mean values of virus titers ($\log_{10}$ 50% tissue culture infective dose/ml) between vehicle-treated ferrets and sialidase fusion protein-treated ferrets on day 1 (4.4 versus 2.4), day 2 (4.7 versus 4.6), day 3 (2.7 versus 3.9), day 4 (3.7 versus 3.4), and day 5 (negative value versus 2.6) postinfection, it is hard for readers to understand how Malakhov et al. could make the conclusion that differences between these two groups are significant. Furthermore, Malakhov et al. ignored the fact that in the group treated with the sialidase fusion protein, 7 of 12 ferrets shed virus on days 2 and 3 postchallenge, and 6 of 12 ferrets shed virus on day 4 postchallenge. More importantly, 2 of 12 ferrets in the group treated with the sialidase fusion protein still shed virus on day 5 postchallenge, while none of the 8 ferrets in the vehicle-treated group shed virus. Malakhov et al. also didn't mention that nasal virus titers in the sialidase fusion protein-treated ferrets were about 15 times higher on day 3 and at least 200 times higher on day 5 postchallenge than those in the vehicle-treated ferrets. Malakhov et al. should explain why 2 of 12 sialidase fusion protein-treated ferrets shed virus on day 5 postchallenge while none of the 8 vehicle-treated ferrets did and repeat the ferret studies before making conclusive statements. Nevertheless, Malakhov et al. did realize and describe the limitations of the ferret study in the Discussion section.

Additionally, Malakhov et al. omitted the chapter title, page numbers, and names of the editors for their reference 12, which makes it difficult for readers to find the cited reference. Therefore, I list here the complete information for that reference (1).

REFERENCES

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